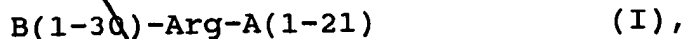


¹⁷/₂. A process for the preparation of a compound of the formula I,



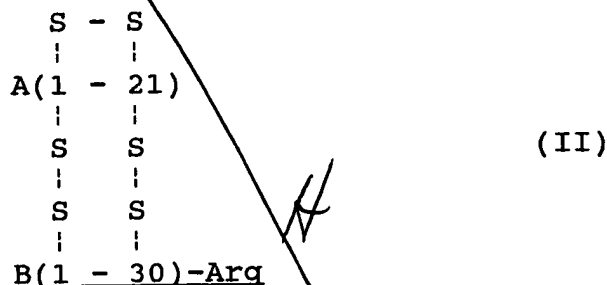
which comprises expressing a gene structure encoding for this compound in a bacterium and, if the gene structure also encodes a fusion protein, liberating the compound of the formula I from the fusion protein.

¹⁸/₃. A DNA encoding for the compound of the formula I.

¹⁹/₄. A gene structure or plasmid containing the DNA as claimed in claim ¹⁸/₃.

²⁰/₅. A bacterium containing the gene structure or plasmid as claimed in claim ¹⁹/₄.

²¹/₆. A method for the preparation of a compound of the formula II



in which A(1-21) and B(1-30) denote the A and B chains of human insulin and the -S-S- bridges are positioned as in insulin, using the compound of the formula I which comprises:

(a) expressing a DNA molecule encoding the compound of the formula I in a bacterium; and

7'
cont.

sub
H'

(b) incubating the expressed compound of the formula I resulting from step (a) with trypsin under slightly acidic conditions at a pH of about 6.8 where phenol and other similar aromatics are not present.

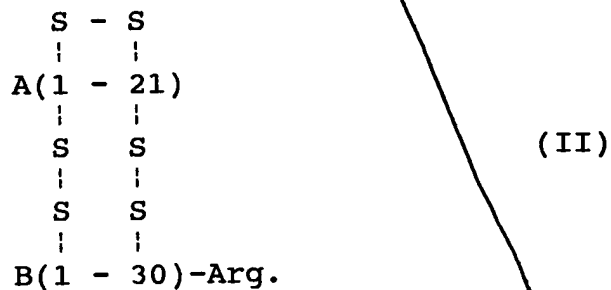
²²⁷. A method for the preparation of insulin using the compound of the formula I which comprises:

(a) expressing a DNA molecule encoding the compound of the formula I in a bacterium;

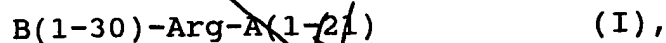
(b) incubating the expressed compound of the formula I resulting from step (a) with trypsin under slightly acidic conditions at a pH of about 6.8 where phenol and other similar aromatics are not present; and

(c) cleaving the resulting compound of the formula II with carboxypeptidase B.

²³⁸. A method as claimed in claim ²²7 wherein steps (b) and (c) are carried out in one vessel without having to isolate an intermediate compound of the formula II



²⁴₉. A fusion protein which comprises the compound of the formula I,

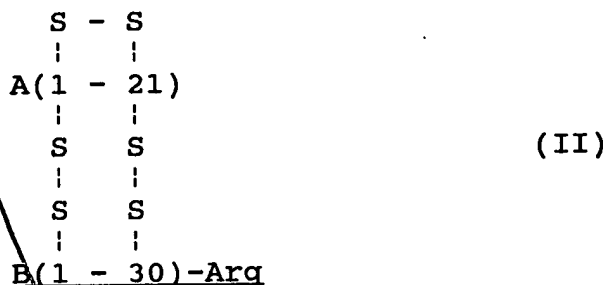


bonded via a bridging member



to a peptide which stabilizes the fusion protein.

²⁵
 10. A method for the preparation of a compound of the
 formula II



in which A(1-21) and B(1-30) denote the A and B chains of human insulin and the -S-S- bridges are positioned as in insulin, which comprises:

(a) expressing a DNA molecule encoding the fusion protein of claim ²⁴ in a bacterium;

(b) cleaving the expressed fusion protein resulting from step (a) with cyanogen bromide, thereby producing mini-proinsulin; and

(c) incubating the mini-proinsulin of step (b) with trypsin under slightly acidic conditions at a pH of about 6.8 where phenol and other similar aromatics are not present.

²⁶
 11. A method for the preparation of insulin which comprises:

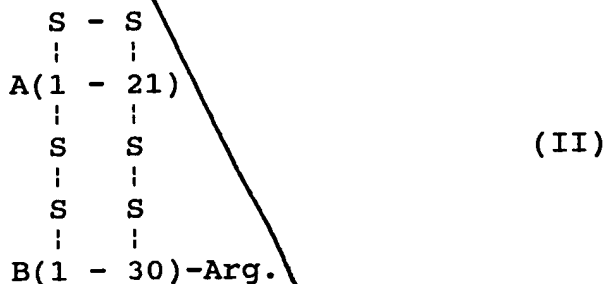
(a) expressing a DNA molecule encoding the fusion protein of claim ²⁴ in a bacterium;

(b) cleaving the expressed fusion protein resulting from step (a) with cyanogen bromide, thereby producing mini-proinsulin;

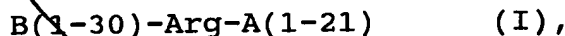
(c) incubating the mini-proinsulin of step (b) with trypsin under slightly acidic conditions at a pH of about 6.8 where phenol and other similar aromatics are not present; and

(d) cleaving the resulting compound of the formula II with carboxypeptidase B.

²⁷₁₂. A method as claimed in claim ²⁶₁₁ wherein steps (c) and (d) are carried out in one vessel without having to isolate an intermediate compound of the formula II



²⁸₁₃. A compound of the formula I,

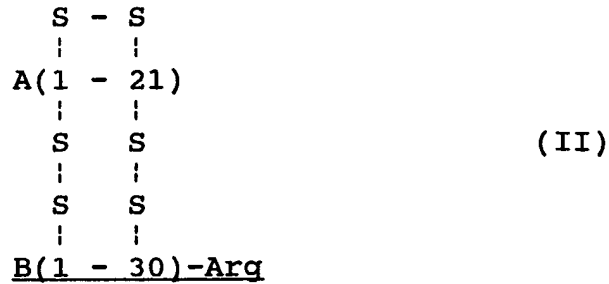


in which B(1-30) and A(1-21) denote the B and A chains of human insulin, which is formed by the process which comprises:

(a) expressing a DNA molecule encoding for the compound of the formula I in a bacterium; and

(b) when said compound of the formula I is part of a fusion protein, liberating the expressed compound of the formula I resulting from step (a) from the fusion protein.

29~~24~~. A compound of the formula II

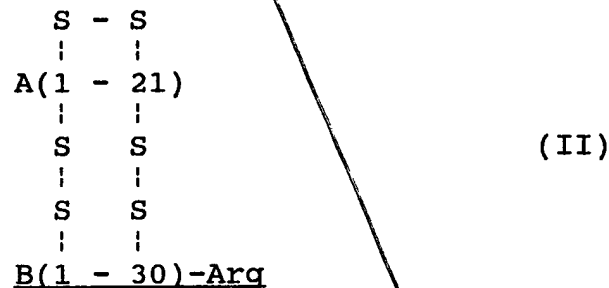


in which A(1-21) and B(1-30) denote the A and B chains of human insulin and the -S-S- bridges are positioned as in insulin, which is formed by the process which comprises:

(a) expressing a DNA molecule encoding for the compound of the formula I in a bacterium; and

(b) incubating the expressed compound of the formula I resulting from step (a) with trypsin under slightly acidic conditions at a pH of about 6.8 where phenol and other similar aromatics are not present.

30~~25~~. A compound of the formula II



in which A(1-21) and B(1-30) denote the A and B chains of human insulin and the -S-S- bridges are positioned as in insulin, which is formed by the process which comprises:

(a) expressing a DNA molecule encoding the fusion protein of claim ²⁴~~9~~ in a bacterium;